SOME NEW BOOKS.

Evolution and Immortality There has been of recent years a pronoudisposition among biologists to restate, or rather to redistribute and reweigh, the dence for the doctrine of evolution. To the general reader, who, perhaps, may have peither the training nor the time requisite for following a technical discussion of the subject. it has become a matter of deep interest to learn the practical outcome of the movement to we have referred. Has it shaken the foundations of the evolutionary hypothesis, or has it, at all events, affected the materialistic Implications popularly ascribed to the theory answerthese questions is the aim of a new and much enlarged edition of the book entitled Evolution and its Relation to Religiou Thought, by Joseph Le Conte, Professor of Bi ology and Natural History in the University of California. In this revision of his work the author has devoted a chapter to the consideration of the factors of evolution their number and relative importance, and to an examination of the position taken by the Neo-Darwinists, including conspicuously Prof. Weismann. Next, in immediate connection with the specific purpose of his book, th author proceeds to discuss some fundamental religious questions upon which he did no touch at all in his first edition. Such are the topics of first and second causes, of general and special providence, of the natural and su pernatural, of mind vs. mechanics in nature. and of the mode of creation. The only other important additions are concerned with the relation of man to nature and the relation of evolution to Christianity. In the present no tice we shall first glance at what the author has to say regarding the Neo-Darwinists and the proposed regrading of the factors of evolution, and then pass directly to his view of the origin and destiny of man's spirit. From the relation of man to nature one would procee by a natural transition to the relation of God to man, but for what the author has to say upon the latter subject we must refer the reader to the book itself.

What are the factors of evolution and what is the relative importance of their respective contributions? What may be termed the or thodox Darwinians, including preëminently Darwin himself and Mr. Herbert Spencer, recognize two Lamarckian factors, namely, the pressure of the environment and the use and disuse of parts, and two Darwinian fac tors, to wit, natural selection and secular seection. The two great founders of the theory of evolution. Darwin and Spencer, differ main ly as regards the relative importance of the two sets of factors, Spencer considering the Lamarekian factors the most potent and Darwin ascribing the larger influence to the fac-tors associated with his name. Mr. George J. Romanes would add a fifth factor, which he calls physiological selection, while Prof. Le Conto and others affirm the existence of a sixth factor, viz., the interposition of reason where the development of human beings is concerned. Opposed to these upholders of a plurality of factors are the Neo-Darwinists, at whose head stand such distinguished biolo gists as Wallace, Weismann, and Lankester. The latter out-Darwin Darwin himself in their exaltation of the most distinctive Darwinian factor, natural selection. They aim to show that natural selection is the sole and sufficient cause of evolution; that changes in the individual, whether as effect of the environ nent or through use and disuse of organs, are not inherited at all; that Lamarck was wholly wrong; that Darwin tin connection with Wallace) was the sole foun ler of the true theory of evolution, and finally that Darwin himself was wrong only in so far as he made any terms whatever with Lamarck.

Prof. Le Conte concedes that the reasons for the Noo-Darwinian view have been most strongly put by Weismann. They are based mainly on the Freiburg professor's celebrated theory of the immortality and immutability of germ-plasm. According to Weismann, the animal body consists of two kinds of cells. wholly different in function, viz., somatic cells and germ cells, the latter including both the male and female sexual elements. Somatic cells-the adjective is, of course, derived from the Greek word soma, meaning body-are specially modified for the various functions of the individual body; germ cells are wholly unmodified. The somatic cells are for the conservation of the individual life, the germ cells for the conservation of the species. In the development of the egg the germ cell multiplies itself into a cell aggregate, and then most of the resulting multitude of cells are modified in various ways to form the tissues and organs of the body, or, in other words, somatic cells. A few, on the other hand, are reserved and put aside in an unmodified form in the sexual organs as germ cells to again produce eva, which again divide into somatic and germ cells, and so on indefinitely. Now, according to Weismann, inheritance takes place only through germ cells, white the environment affects exclusively the somatic cells. Consequently, changes produced by the environment cannot be inherited. Sexual modes of generation were introduced for the purpose of producing variability in progeny, and thus furnishing materials for natural selection, as this was the only means of evolu tionary advance. It is well known that Weismann made various experiments on animals. especially by mutilation, to show that sometic

changes are not inheritable. The author of this book does not accent the conclusions of the Neo-Darwinists. He follows Spencer in affirming the Lamarckian factors to be true factors, because there was a time when there were no others. They wore therefore necessary at least to start the process of evolution, even if no longer neces sary at present. He goes on to argue that if these factors were ever operative they must be so still, though possibly in a subordinate only becomes subordinate to a higher when the latter is introduced. Thus it may well be that Lamarekian factors—the pressure of environment and the effect of use and disuseare comparatively feeble at the present time and among living species, especially of the In the earliest stages of evolution there was complete identification of germ cells and somatic cells, of the individual with the spe sies, In such cases, of course, any effect of the environment must have been inherited and increased from generation to generation. Moreover, the differentiation of the germ and somatic cells was not effected all at once, nor is their sympathetic relation even now completely severed. It was a gradual process and therefore the effect of the environment on the germ cells through the somatic cells continued, though in decreasing degree, and still continues. Prof. Le Conte acknowledges, how ever, that the differentiation in the higher animals is now so complete that germ cells are probably not at all affected by changes in omatic cells unless these changes are long continued in the same direction and are not antagonized by natural selection. The ent tendency of germ cells to immutabilin the higher organisms to the interior of the body, where they are more and more protected from external influences. There is also a moral aspect of the Neo-Darwinist position which causes the author of this book to rejoted in the conviction that the power of ransmitting somatic changes by inheritance has not been wholly lost. If Weismann and Wallace were right, if natural selection were the exclusive factor of evolution, we should have to forego the hope of race improvement. physical, mental, and moral; for the flerce and pitiless operation of natural selection will never be telerated by civilized man, as it is by nature in the case of the lower organisms. Man's spiritual nature welcomes a recourse to the Lamareking factors of environment and of use and disuse, but revolts at the exclusive and unserupulous employment of natural selec-

On this point the author dwells at length

and with much emphasis; he points out that

all eplightened schemes of physical culture

and hygiene, although designed primarily to secure the strength, the health, the happiness of the present generation, yet are sustained and ennobled by the conviction that the improvement of the individuals of each genera tion leads through inheritance to the gradual physical melioration of the race. So, too all our systems of intellectual and moral education, though certainly intended mainly for the development of the individual, are dignifled by the hope that the race also is thereby gradually elevated. Prof. Le Conte indeed cknowledges that these hopes are usually extravagant: that the whole improvement of one reneration is not carried over by inheritance into the next, and that consequently we cannot by education raise a lower race up to the plane of a higher in a few generations, or even in a w centuries. He is convinced, however, that there must be at least a small residue of melioration carried forward from each generation to the next, which, accumulating from age to age, determines the slow evolution of mankind. . Such, at all events, is the hope on which all noble efforts for race improvement are founded. But this, as we have seen, must be abandoned if Weismann and Wallace are right. If it be true that reason must direct the course of human progress, and if it be also true that election of the fittest in the biological, organic sense is the only method which reason can employ, then the dreadful law of pitiless destruction of the weak, the helpless, the sick, and the old, must with Spartan firmness be deliberately carried out. Against such a course we instinctively shrink with abhorrence.

In the most important chapter of this book that devoted to an exposition of the relation of man to nature, the author sets forth clearly and fairly the conclusions of the materialists pefore defining his own position, which differs essentially from theirs. He begins by reminding us that there are two widely distinct views of the subject, the one as old as the history of human thought, the other urged upon us by modern science. According to the former, man is the counterpart and equivalent of nature. He alone has-in fact is-an immortal spirit and therefore he belongs to a world of his own. According to the latter and more recent view, man is but a part, a very insignificant part of nature, and connected in the closest way with all other parts, especially with the animal kingdom. He has no world of his own, nor even kingdom of his own; he belongs to the animal kingdom. In that kingdom he has no department of his own; he is a vertabrate. In the department of vertebrates he has no privileged class of his own; he is a mammal. In the class of mammals he has no titled order of his own; he is a primate, and shares his primacy with apes. It is doubtful if he may enjoy the privacy of a family of his own-the Hominide-for structural differences between man and the anthropoid apes are probably not so great as between the sheep family and the deer family

It may, indeed, be contended that these are only two views of the same phenomena taker from different points, psychical and structural. From the psychical point of view it is impossi bie to exaggerate the wideness of the gap that separates man from even the highest animal From this point of view man may indeed be set over as a counterpart and equivalent not only to the whole animal kingdom, but to the whole of non-human nature. From the structural point of view, on the contrary, it is impossible to exaggerate the closeness of the connection. Man's body is identified with all non-human nature in its chemical constituents, with the body of all animals in its functions, with all vertebrates, especially mam mals, in its structure. Bone for bone, muscle for muscle, ganglion for ganglion, almost nerve fibre for nerve fibre, his body corresponds with that of the higher animals Whether he was exclusively derived from lower animals or not. Prof. Le Conte concedes that his structure, even in the minutest details, is

precisely such as it would be if he were thus derived by successive slight modifications. Neither is it disputed by the author of this book that of these two views the latter, which affirms the identity of man with nature, has been in recent times enormously broductive in increasing our knowledge. Anatomy has secome truly scientific only through comparaive anatomy; physiology through comparative physiology; embryology through comparative embryology. Sociology, under the impulse given by Spencer, is itself aiming to become scientific through comparative sociology. thing may be predicted of psychology that, in other words, even psychology can become truly scientific only comparative psychology; that is, through the study of the spirit of man in rela tion to what corresponds to it in lower animals. This view and this method, however, when pushed to what seems to many their logical conclusion, end in the complete identification of man with mere animals, of spiri with mere physical and chemical forces, of immortality with mere conservation of energy, and thus lead to blank and universal materiallsm. Is there any escape from such a conclu sion? This book has been written to demon strate that there is; that the two extreme views, psychical and structural, are not irrecon but that a true and rational philos only is to be found only in a higher view which combines and reconciles the mutually excluding extremes.

Before marking the author's formulation of his proposed synthetic and reconciling view let us note how he brings out certain shortcomings in the argument for materialism. O this argument one branch is derived from brain physiology, the other from evolution As regards the former branch, it is admitted that physiologists have established the correlation of vital with chemical and physica forces, and probably in some sense, at least, o mental with vital forces. They have proved in every act of perception, first a physical change in a nervo-terminal, then a propagated thrill along a nerve-fibre, and then a resulting change, physical or chemical, in the brain They have also proved in every act of volition, first a change in a brain cell, then ar outward expedited thrill along a nerve fibre. and a resulting contraction of a muscle the velocity of the transmission to and fre has been measured, and the time necessary to produce brain change estimated. Physiologists have also established the existence of physical and chemical changes in the brain corresponding to certain changes of mental state, and they have given great probability to the assertion that an exact quantitative relation may exist between the changes of the corresponding changes of mind. Prof. Le Conte admits that hereafter physiologists may localize all the different faculties and powers of the intellect, each in its specific place in the brain, and thus lay the foundations of a truly scientific phrenology. In the far distant future they may do even more They may connect each kind of mental state with a distinctive kind of change. They may find, for exam-ple, a right-handed retation of atoms examassociated with love and a left-handed rotation associated with hate, or a gentle sideways oscillation associated with consciousness and a vertical pounding associated with will. As suming all this to be accomplished, the muterialists maintain that mind would thereby be identified with matter, mental forces with material forces. Thought, emotion, consciousness, and will would thenceforth be recog nized as products of the brain in the same sense as bile is a product of the liver, or urea a product of the kidneys. much for the argument of the materialists; now for what the author of this book deems its inadequacy. He

submits that we may push our knowledge in a physiological direction as far as the

holdest imagination can reach, yet even then

mystery of the relation of brain changes to

mental changes than we are now. Even then it

will be impossible for us to conceive how brain changes produce mental changes, or vice versa.

It is of course intelligible that physical changes in sense organs transmitted along nerve fibres should determine changes in brain substance But now there appear, and it is impossible to imagine how, consciousness, thought, emotion and will, phenomena of an entirely different order belonging to an entirely different world. So different that it is impossible to imagine the nature of the nexus between physiological and psychological phenomena, or to construc the one in terms of the other. Brain cells are agitated and thought appears; Aladdin's lamp is rubbed and the genie shows himself. There s just as much intelligible causal relation between the two sets of phenomena in the one case as in the other. Nor is this mystery one of those whose nature it is to vanish under the light of knowledge. On the contrary, science only brings it out in sharper relief and emphasizes its absolute unsolvableness. Suppose, by way of illustration, that we could expose the brain of a living man in a state of intense activity: suppose, further, that our senses were absorbed lutely perfect, so that we could see every change of whatever sort taking place in the brain substance. What should we see? Obviously nothing but molecular changes, physical and chemical, for to the outside observer there is absolutely nothing else there to see But the subject of this experiment sees nothing of all this. His experiences are of a different order, viz.: consciousness, thought, emo tion, &c. Viewed from the outside there is and nothing but motions; CAD from the inside nothing but thought, &c.: from the one side only physical phenomena; from the other side only psychical phenomena; from the nature of the case it must ever be so There are, so to speak, two sheets of blotting paper pasted together; the one is the brain, he other the mind. Certain ink scratches or blotches utterly meaningless on the one sonk through and appear on the other as intelligible writing, but how we know not, and can never hope to guess. When the paste dissolves shall the writing remain? That is the question to which all of us would like to see a

lecisive answer. It may, indeed, be objected that there is othing specially strange, nothing unique in the unintelligibility of psychical experiences from a physiological view point, for the same mystery enfolds the essential nature of all cinds of force and matter, and therefore all henomena. There is this difference, however, Physical and chemical forces and phenomena are indeed incomprehensible in their essential nature; but once accept their existence and all their different forms are mutually convertible, construable in terms of each other and all in terms of motion. But it is impossible by any stretch of the imagination to thus construcmental forces and mental phenomena. In a word, material forces and phe-nomena are indeed a mystery, but only of the first order. They cease to be a mystery and become intelligible from the moment we take our stand upon the postulated plane of material existence. On the other hand, mental and moral forces are a mystery even from the standpoint of material existence, and are therefore a mystery of the second order-a mystery within a mystery. Materialism, therefore, does not explain. It does not enable us even to imagine, as between physical and psychical phenomena, a relation of cause and effect in the same sense in which we use these terms in physical science.

Let us see now whether we do not encounter a corresponding shortcoming in the other branch of the argument for materialism. that, namely, which is derived from the law of evolution. If, as the materialists say, the congeries of psychical qualities. which we call the spirit of man, be, like his body, the product of evolution, it seems incumbent upon them to tell us at what point in the ascending scale of evolution it entered. This, however, they canot do. What are the psychical qualities? Evidently consciousness, thought, will, memory, love, hate, fear, and desire, are some o them. But has not a dog or a monkey all of Pressed with this difficulty some these? have felt compelled to accord even immortality to the higher animals. But we cannot stop here. It spirit belongs to hese, then it belongs also to all animals, for we have here only a sliding scale without break. Can we stop now and make spirit coextensive with sentiency? No: for the lower animals and lowest plants merge into each other so completely that no one can draw the line between them with certainty. We must. herefore, extend spirit to plants also. Shall we stop even here and make spirit coextensive with life? We cannot, for life-force is certainly correlated with, transmutable into, and derivable from physical and mental forces We must, then, recognize the existence o spirit in dead nature also. It follows that everything is immortal or that nothing is Our boasted or coveted immortality has by continued extension become thinner and thinner until it has evaporated into air. It has shrunk isto naught but conservation of energy, and has kept no trace of the hopedor conservation of self-conscious personality. This difficulty presented in the taxonomis series again confronts us in the embryonic series. Each one of us, individually, was formed gradually in his mother's womb by a process of evolution from a microscopic spherule of protaplasm undistinguishable in structure from the lowest forms of protozoal life. Now, in this gradual process of vaginal evolution, where did the spirit which we like to think immortal, come in? Was it in the germ cell? Then why deny it to the protozoan? Was it at the quicken-

ing, or at the birth, or at the moment of first

capacity of abstract thought? Again, when it

did it grow out of something already existing

in the embryo of the infant? To none of these

lid come in was it something superadded, or

questions does the materialist give an answer The author of this book holds that the con gerles of psychical qualities to which we would fain attribute an immortality, entered the scale of evolution with the advent of man that it was, however, no new thing added at once out of hand, but that it grew out of some thing already existing in animals. This he deems the only tenable view, the only view that can effect the requeillation between the two extreme, mutually excluding views now usually accepted; the only view, in other words, which can satisfy the test of a rationa philosophy. Prof. Le Conte believes that the spirit of man was developed out the anima or conscious principle of animais, and that this again had been devaloned out of the lower forms of life force, and this in its turn out of the chemical and physical forces of nature. He believes that at a cer tain stage in this gradual development, viz. with the advent of man, this spirit acquired the property of immortality precisely as i now in the individual history of each man at certain stage acquires the capacity of abstrac thought. This view is the author's own, hav ing been promulgated many years before Mr A. R. Wallace gave a qualified assent to it. and. therefore, for its accommune, he is constrained to appeal not to authority, but to reason solely. We proceed to give an outline of his argument: Our attention is first invited to the fact that there is nothing wholly exceptional in the as sumed transformation, coupled with the sudden appearance of new powers and properties On the contrary, such a metamorphosis and emergence of distinct capacities has many analogues in the lower forces, and is, consequently, a priori not only credible but probable. For example, force and matter may be said to exist now on severa planes raised one above another. These exhibit a sort of taxonomic scale. There are of chemical compounds; thirdly, the plane of vogetable life; fourtaly, the plane of animal life: and fifthly, the plane of rational and, as men hope, immertal

Each plane has its own appropriate force and

distinctive phenomena. Moreover, although

between any one of them and its predecesso or successor. That is to say, although there re various degrees of the force characteristic of each plane, ret the difference between the haracteristic forces is one of kind as well as of degree. Although energy by transmuta-tion may take all those different forms, and thus does now circulate up and down through all these planes, yet the passage from one plan upward to another is not a gradual passage by iding scales, but a passage accomplished a one bound. When in the history of the evolu tion of the cosmos the necessary conditions are present, a new and higher form of force at once appears, like a birth into a higher sphere. Thus there was a time in the history of the earth when only physical forces existed, chem cal affinity being held in abeyance by the intensity of the heat. At a certain stage, through gradual cooling, chemical affinity came into being-was born-a new form of force with new and peculiar phenomena though doubtless derived from the preceding. Ages upon ages passed away until the time was ripe and conditions were favorable, whereupon life appear-ed, a new and higher form of force producing a still more peculiar group of phenomena, but still, as Prof. Le Conte believes, derived from the preceding. Ages upon ages again passed away, during which this life force took on algher and higher forms-in the highest fore shadowing and simulating reason itself—until inally, when the hour was wholly ripe and conditions were exceptionally favorable, spirit self-conscious, self-determining, rational, and moral appeared, a new and still higher form of force, but still, as the author of this book is persuaded, derived from the antecedent phe omena.

VI. Admitting the correctness of this staccate rocess of evolution so far as the five main tages are concerned, what, it may be asked s its bearing on the assumption that th spirit of man is immortal? In reply the reade s reminded that with every new form of force with every new birth of the universal energy into a higher plane, there are revealed new nexpected, and, previously to experience wholly unimaginable properties and power The latest birth, man's spirit, is of course no exception. Why may not immortality be one of the new properties acquired with the ad vent of man? That it is one of them Prof Le Coute deems probable in view of the rela tion of God to nature, which is expounded in the earlier chapters of this volume. Sucinctly stated, the author's conception of tha relation is that the forces of nature are naugh else than different forms of the omnipresent divine energy. As we have just seen, this divine omnipresent energy has taken on successively higher and higher forms in the course of cosmic time. This upward movement has been characterized by in ereasing individuation, not only of matter, but also of force. The universal divine energy in a generalized condition, unindividuated, dif fused, pervading all nature, is what we call physical and chemical force. The same energy in a higher form, individuating matter, and itself individuated but as yet only very imperfectly is what we call the life force of plants. The same energy more fully individuating matter, and itself more fully though not completely individuated, we call the anima of animals. Thi anima, or animal soul, as time went on was individuated more and more until it resembled and foreshadowed the spirit of man. Finally, in the spirit of man we are to recognize the same energy at last completely individuated as a

cious, capable of separate existence, and therefore immortal. According to the view here expounded, the vital principle of plants and the anima of animals are but different stages of the pre-natal development of spirit in the wamb of nature In man at last it came to birth. In plants and animals it remained in deep embryo sleepin the latter quickened indeed, but not viable -still unconscious of self, incapable of inde-pendent life, linked in physical umbilical consection with nature. Now at last in man it is separated from nature, capable of independent life, born into a new and higher plane of existence. As the organic embryo at birth reaches independent material or temporal life, even so the spirit embryo by birth attains independent spiritual or eternal life. Not. indeed, that the separation or independence is complete so long as the spirit has its tenement in the human body. While that tenancy endures, nature is, it is true, no longer the restative mother, but she is still the nursing mother of the spirit. We are wesned from her only by death.

separate entity, and consequently self-con-

It may be objected that the ascription of im mortality to the spirit of man is not warranted by analogy; that there are other births of energy from lower to higher conditions, but such pirths do not insure continued existence in the higher conditions. In the gradual evolution of energy as above described, when a given portion of it rises from physical to chemical from chemical to vital, or from vital to sentient. It does not remain ever after in the higher state-there is no immortality on the higherplane. On the contrary, all these lower forms of energy are continually ascending and decending: transformation is downward as well as unward. Why should there be exception in the latest birth whose outcome is the spirit of man? In these successive upward metamor phoses of energy, why should the last only be permanent? The author's answer is: Because the energy which unindividuated and diffused pervades all nature, reaches at last its final gosl, viz., complete individuation as free, selfetting spirit. Because it reaches again the spiritual plane from which it sprang, and beomes thereby a partaker of the divine nature. Because it mounts at last into moral relations with the absolute the divine, and therefore above the plane of shifting changes. If the scale of energy be likened to a ladder with many rounds, stretching from the plane of matter to the plane of spirit, then so long as energy is on the ladder it ascends and deseends; but, once it reaches the plane of free spirit, it is in a wholly new world in which ternal ascept is the law.

This, then, is Prof. Le Conte's conception of he relation of man to nature-the concention by which he aims to reconcile the Chrisian view of man's origin and destiny with the view favored by most modern scientists. His conception is that the spirit of man was indeed derived from God, but not directly; reated indeed, but only by natural process of evolution: that it indeed proexisted, but only as embryo in the womb of nature; slowly developing through geological time, and finally coming to birth as living soul in man. At that inst stage of its development it attained to immortality.

Theories About the Sun In his "Dynamics of the Sun" (New York Woodbridge School, 1801). Mr. J. Woodbridge Davis undertakes to prove that the atmospher of the sun, consisting of vapors, gases, and their condensed particles, the products of s powerful vaporization, is continually flying utward past the planets until it comes in contact with the similar atmospheres of the stars. He first develops his theory mathematically by deducing from the laws of thermo-dynam ics a series of formulæ applying to a body situ ated in ethereal space, so far removed from extraneous forces that their effects upon are insignificant, consisting of a mixture of solids, liquids, and vapors, and containing some quantity of heat. By the falling together of the solid and liquid portions a nucleus is formed, which retains the "original energy of rotation of its constituent particles." vapors range themselves about the nucleus. and the body is then ready for the application of Mr. Davis's formulæ. Starting out with the general assumption that the behavior of the atmosphere of the body depends upon the mass, density, and temperature the nucleus, he proceeds to develop five principal cases or conditions in which the body will be found, a searding as the funda mental formulæ are varied. Examining the known phenomens of the sun he concludes there are great differences of level on, each of these planes, yet there is a very distinct break | the cases thus developed, in which the atmosphere of the body under examination is flying ecording to the author's opinion, account satisfactorily for the phenomena of the sola photosphere, the corona, and the zodiscalight, the tails of comets, and variable stars but also for those of terrestrial magnetism. including the variations of the needle and the secular movement of the magnetic poles.

Just here there is a point of meeting between Mr. Davis's theory and the recent results ob-tained by Prof. Frank H. Bigelow in his investigation of the solar origin of terrestrial mag-netism. But there is no resemblance in that the field of radiant sunlight is a magnetic field of force surroundng the sun, and that the phenomena errestrial magnetism arise from the motions of the earth through this field of force. Mr Davis undertakes to derive the same phe nomena from the effects of the imagined outflying atmosphere of the sun brushing past he earth. The astronomers have lent a ing ear to Prof. Bigelow, and look upon his inestigations with both favor and expectation Mr. Davis specially addresses himself to the same critical audience, and seems confident that he has explained the principal remaining mysteries in astronomy in a very simple as vell as comprehensive way. But perhaps th astronomers will not so readily believe that the great secret of the universe is out.

The whole subject, however, is one of par ticular interest just now, when new light is constantly dawning upon questions of celer tial physics.

hristian Literature of the Second Century

We are indebted to three members of the faculty of the University of Dublin for a collection of interesting essays on "The Literature of the Second Century," with special refrence to its bearing on the subject of Christian evidences (New York, James Pott & Co.) One of the authors, the Rev. Frederick R. Wynne, holds the chair of Professor of Pas toral Theology; another, the Rev. John Henry Bernard, is a lecturer in divinity, and the third the Rev. Samuel Hemphill, is Professor of Biblical Greek. Representing as they all do Trinity College, Dublin, the chief bulwark of the Anglican Church in Ireland, they write of course from the viewpoint of Protestant theologians, neither adhering to the positions of Roman Catholic authorities nor adopting the conclusions of the advanced German crites regarding the beginnings of Christianity They have gone, however, for their materials to the original sources, and the outcome their labors reflects credit on the learning and insight of English biblical scholars. their six essays, which first appeared in the form of university lectures, two seem to us of especial value, those, namely, which discuss respectively the gradual growth of the New Pestament canon and the apocryphal gospel

In tracing the evolution of the New Testa ment canon Dr. Wynne reminds us that Diodetian, about A. D. 303, tried to consign the Christian Scriptures to the same complete destruction which some five centurie earlier a Chinese Emperor had planned against the writings of Confucius. Previously the Roman persecution had been directed against persons; this attack was levelled not only against persons, but against books Eusebius, the principal Christian historian of the epoch, records that he "saw with his own eyes the inspired and sacred Scriptures con igned to fire in the open market places." Bu all the documents which had been handed lown among the followers of Jesus were no regarded as equally holy, and consequently when Christians were ordered on pain of torture and death to give up their sacred writ ings, the question arose which might they inwfully surrender and which was it imperi tive on them to keep. The peremptory edict of heathen authority made it important to have some definite "canon" or rule by which timid Christians could be guided to be sure of the difference between merely good books and inspired books From the heat of the controversy arising upon this subject issued the expression "canonical" as a general title for the apostolic writings. The word canon, or straight rule." had been used before with regard to right doctrine; from the era of the Diocletian persecution it came to be applied to the books that were accepted by the Church as rightly belonging to the New Testament. Dr. Wenne's nurpose is to follow the growth of the idea expressed by the word anon from a vague general consciousness to Strange to say, the first extant list of New

a distinct registration. Testament writings is the work of a her etic, though the fact of his having made one for the use of his followers seems to justify the inference that there were in existence other lists of which he disapproved. It was Marcion, one of the heresiarchs of the first half of the second century, who formed a collection of sacred books as the ground and test of his teaching. It consists of two parts. the "gospel" and the "apostolleon." The gospel was that of St. Luke, though the text was somewhat tampered with: the anostolicon comprised ten epistles of St. Paul. Somewha later, and belonging apparently to a date be tween A. D. 100 and 170, is encountered a sec ond list of books that were at that time gen erally accepted by the Christian Church. This is called the "Muratorian Fragment." having been discovered by Muratori in the Ambrosian Library at Milan during the seventeenth century. There is reason to believe that it was brought to Milan from the old Irish monastery of Bobbio. Of this fragment the beginning and end are lost; It commences with a broken sentence, which evidently re-fers to the position of St. Mark's gospel. The writer goes on to say that the "gospel according to St. Luke stands third in order, having been written by Luke, the physician the companion of St. Paul." The fourth place is assigned to the gospel of "St. John, a disciple of the Lord." The writer next designates the Acts and thirteen epistles of St. Paul. After this he treats of books which are in circulation, but which, he says, cannot be received into the Catholic Church, "for gail cannot be mingled with honey." He specifically names, however, the Epistle of Jude and II. John and the Apocalypse of John, and Peter: "The latter," he says, "some of our body will not have read in the Church." The Muratorian document, as we have it, is a translation, and the text is imperfect, but it derives importance from the fact that the author states not his individual opinion, but the knowledge and practice of the Catholic Church. The next step in the prog-

ress of the canon is discernible in the versions of New Testament writings, two of which have come down to us from the second century. The first of these was the "Poshito." or ancient Syriae translation, which apparently was made in the earlier half of the under review, and seems to have included our present books, with the exception of second and third John, II. Peter, Jude, and the Apocalypse. Perhaps a few years later appeared the old Latin version which we know was used by Pertulian, who began to write about A. D. 198). Putting these two ancient translations together, as representing the united testimony of the East and West, we find recognized in one or the other all the books of our New Testament with the exception of 2 Peter, and none but those which we have acknowledged. About the third quarter of the same second century appeared the remarkable document known as Tatian's Distessaron, a kind of synopsis or harmony of the four gospels which was widely used for public reading in the Syrian churches Though Tatian was the leader of an heretical sect, yet the materials out of which the Diatessaron was composed are the four gospel received by the Church Catholic, 2 Peter. We now emerge out of the clouds and come into the daylight of well-defined hisory, for from the close of the second

century Christian authors become so nu-

merous that it is easy to ascertain the ideas

and beliefs of the Christian community. From the time of these writers to that of Eusebius the evolution of the canon may best be described in the phraseology used by that his-torian. He distinguishes three classes of books. First, the acknowledged: second, the disputed; third, the spurious. As early as the close of the second century what Eusebius calls the acknowledged books had all been generally recognized in the Church as apostolic. They were the four gospels, thirteen epistles of St. Paul. I. John, and I. Peter se which he classed as disputed were II and III. John, Jude, Hebrews, II. Peter, and the Apocalypse. A number of other books there were, some of them, like the Shepherd of Hermas, accounted plous and genuine, but not apostolic; some of them repudiated as dishonest endeavors on the part heretics to strengthen their opinions onored name. The progress of knowl edge and criticism in the third century was to out them all saids. At the time when a deflnite canon had to be drawn up during the Diocletian persecution the list of inspired books and long been fully formed and weeded of unauthorized intruders. Thus at the Genera Council of Nicwa, A. D. 325, the New Testament as we have it to-day was the basis of all

argument.

A separate essay is devoted by the Rev. J. H. Bernard to "the apocryphal gospels," by which name are described a number of extant books written in the early century with the intention of improving on the picture of the life of Jesus drawn by the Evangelists, and of embodying s collection of legends which from time to time had grown up. Of course, these writings are not to be confounded with the apocrypha books of the Old Testament that are often bound up with our Bibles. They are simply lives of Jesus which acquired a certain circuation in the early centuries, but which are o uncertain authorship and possess no official character. Many of these palpably forgeries, for they claim the names of authors to which it is demonstrable that they have no right. For example, the Gospel of Nicodemus was certainly not written by its nominal author, in its present form at least, nor could the Gospel of James have been composed by either of the apostles of that name. Yet these books are not behind-hand in putting forward their authority to be heard, both the Arable Gospel of the Infancy and the Protevangel of James making express claims to

its inspiration. It is noteworthy that none of these apoery phal gospels gives an account of the public ministry of Jesus, for here it would have been easy to test and demolish their pretensions by comparison with the narratives of the genuin Evangelists. They may be roughly divided info two classes, those, namely, which deal with our Lord's infancy and with the family history of the Virgin Mother, and those which profes to give some account of our Lord's descent to Hades and the underworld after His crucifixon. Scripture being almost silent on these subjects the means of detecting the faisehood of the legends were not so readily accessible.

Of the first class-the only class to which we shall here refer—the most readable and ineresting example is the Protevangel of James written probably by a Jew of that name in the econd century. It is the earliest repertory of ecclesiastical traditions respecting the Virgin Mary, and is not unlike a modern novel on sacred themes. Somewhat longer and more fanciful, but also derived from traditional sources, is the Gospel falsely attributed to St Matthew, and with equal falsehood said to save been translated by St. Jerome from the Hebrew. A still later, though somewhat more ober, recension of the same materials is the Latin Gospel of the Nativity of Mary, which was incorporated almost without change into the Golden Legend of the Middle Ages. The influence which these writings have xercised down to our own day is consider able. Mr. Bernard maintains that the Roman Church, although condemning them as spurious, can yet point to no other authorities ertain legends which are incorporated in the Breviary. Thus the traditional names of the parents of the Virgin Mary, Josephin and Anna, are still venerated in the Church o Rome, and it may be that the familiar collocation of Christian names, Mary Anne, is traceable to the same source. The presentation of the Virgin when a child in the Temple, an event recorded in the Protevangel of James, is still commemorated in Catholic churches. Speaking generally, the three apocryphal gospels named are chiefly taken up with minute details tending to a glorification of Mother.

Mr. Bernard dwells on the surprising extent to which these legends have influenced sacred art. For instance, a subject which has more than once occupied painters, and which is bes known from Perugino's famous picture, is the Marriage of the Virgin. The story on which the pictures are founded is that, it having been determined by the elders that Mary-who had been dedicated to God by Anna-should be betrothed to some pious man, perplexity arose as to the most appropriate suitor. Accordingly, we read: "The angel of the Lord came to Zacharias and said, Go forth, and call together all the widowers among the people, and let every one of them bring his rod; and he le whom the Lord shall show a sign shall he the husband of Mary. And the cryewent out through all Judea, and the trumpets of the Lord sounded, and all the people ran and met together. Joseph also, throwing away his axe, went out to meet them; and when they came together, they went to the high riest, taking every man his rod. After the high priest had received their rods he went into the Temple to pray; and when he had finshed his prayer, he took the rods and went orth and distributed them. and there was no miracle attending them. The last rod was taken by Joseph. and, behold, a dove proceeded out of the rod and flew upon the head of Joseph," who was accordingly selected as the future guardian of the Virgin. Mr. Bernard quotes this story to explain why, in the delineations of the marriage of the Virgin so common in mediaval arts, Joseph is depicted as an old man with a green bough and a dove, while the disappointed suitors are represented as breaking their rods.

Another more lamiliar illustration of the nfluence exerted by such legends upon medieval art is drawn by the Gospel of the Pseudo-Matthew, in which the scene of the Lord's nativity is depicted as a cave which became lliuminated with celestial radiance through he presence of the light of the world. On the third day after His birth, according to the specrypal narrative, the Holy Family renoved to a stable where an ox and an ass wer sheltered, whereupon the animals in their adoration of the infant Saviour fulfilled the words of the prophet: "The ox knoweth his owner and the ass his master's crib. legend, that an ox and an ass shared the same pol with the infant Jesus, was constantly al luded to in mediæval sermons; there is hardly picture, ancient or modern, of the scene of the nativity, which does not introduce these animals, and to this day they are constantly represented on Christmas cards. The traditions handed down in the Gospel of

the Pseudo-Matthew seem sober and plausible beside the stories told of our Lord's boyhood in the so-called Gospel of the Infancy which i attributed to St. Thomas the Apostle. This alse Evangel is mentioned by Ireneus, and seems to have been written by a Gnostic of the second century, whose purpose was to represent the gradual growth of wisdom imputer o Jesus in the genuine Gospels as quite unreal. According to the Gnostice, Jesus from the outset exhibited the perfect wisdom of the Godhead, and accordingly in the Gospel of the Infancy the human nature and development of lesus are entirely overshadowed by the superhuman majesty of His child life. It is recorded, for example, that when the Lord was child and playing with other children on a Sabbath day he made twelve sparrows out of elsy: "When, therefore, one of the Jews had father: Joseph, dost thou not see the child Jesus working on the Sabbath at what is not lawful for him to do? for he has made twelve sparrows of cisy. And when Joseph beard

this he represed the child, saying: Wherefore dost thou on the Sabbath such things as are not lawful for us to do? And when Jesus heard Joseph he struck his hands together and said to his sparrows, Fly! And at the voice of his sommand they began to fly. And when those that were there saw the miracle they were filled with great astonishment." This tale penetrated even to Iceland; it has been found n a collection of Icelandic legends, where it is entitled "The Saviour and the Golden Ployers." Here is another story from the same aporty phal narrative: "Now, Jesus was it years old, and his mother sent him with a pitcher to the fountain to draw water with the childre And it came to pass after he bad drawn the

water that one of the children came against him and struck the pitcher and broke it. But Jesus stretched out the cloak which he had o and took up in it as much water as there had been in the pitcher and carried it to his mother." The Gospel of the Infancy even represents the divine child as using his supernatural powers in the wantenness of cruelty for the purpose of avenging himself on his little playmates for their offences against him. Thus we are told that "A boy, a worker of iniquity, came up and shoved against the shoulder of Jesus, wishing to make sport of him or to hurt him if he could." And Jesu said to him: "Thou shalt not go back safe and sound from the way that then guest." And immediately the boy fell down and died. And the parents of the dead boy who had seen what had happened, cried out, saying: Wheta does this child come from?" and they com plained to Joseph. After some delay Josus rastored the boy to life. Mr. Bernard points out how enterly these stories were assimilated by Mohammedanism

In the Koron, for instance, we find account of Mary being devoted to God by Anna, and a her being sustained during her rejourn in Temple by divinely sent fruits; of our Lorspeaking while yet in his gradie, and of his manufacture of living sparrows out of mud. These and other legends relating to Christ are thought to have reached Mohammedans through the medium of a document edisting from any of the narratives hitherto-mentioned called the Arabic Gospel of the Infancy, which it seems is still in some reputs among the Nestorians of Syria. It seems to have been compiled as late as the fifth century, A. I. and has some touches which betray an Eastern origin. Thus it recounts that the coming of the wise men who were led by the star to the infant Saviour, had been predicted by Zerogster, the Persian sage. It relates also, many mincles which are said to have harpened during the flight of the Holy Family into Egypt. Thus in one city a demonine young woman is healed, out of whom Satan departs in a form possible (as Bishop Eilleott remarks) only to commo -in the form of a young man. We add one more of the stories reproduced by Mr. Bernard from the Arabic Gosnel of the Infancy. Once upon a time in Bethiehem, so it is record-i the Divine Child, with some of his playmates, went into a shop of a dyer. Finding him alsent and the coast clear, the children three all the cloths in the shop into a tub full of blue When the dyer returned he was much vexed whereupon Jesus changed back each of the cloths to its proper color. So strong a haldid the story take on the popular imagination that in Persia, according to travellers, a dyer's

shop is still called a Christ's shop. Why, it may be asked, do orthodox Christians reject these legends while they needs the stories of miracles set down in the regular (sepels? Mr. Bernard answers that the former arnot rejected because of their miraculous character as such. They are rejected because the alleged miracles are not morally beneficial Because they are purposeless and because they are badly attested. Moreover, the remances which narrate them are not nuther tie, having no demonstrable connection wit the persons whose name they bear. It is at the same time suggested that white disaver ing the myths superstitionsly adopted by mediavalism, it is well to remember that from the faith of medieval Christianity we inhest our own.

"WHAT CAN WE DO?"

Tolstol Preaches His Coupel of Love with Some literary person of St. Petersburg, as doubt an ardent admirer of Tolstai wrotety

the shoemaker and author, and nobleman for advice. "What shall we do to help the staring peasants?" inquired this person. Tolde 'I wish with all my heart," wrote the Count that I could express what I think and feel or

this question of the famine. I think and feel in brief, that the famine exists and exists no and exists and exists and exists and exists and exists and exists and exist a constant the exercise by collecting alms and by distributing bread to those in need of it." After reviewing the social conditions which have produced his and other famines in Bussia, he early

"I think it is necessary that we arrest our powers to combat these primat causes of familie, but to ask aid of the Government and to take up collections are entirely useless freedings, and can have only permetous results. To take up collections? You will always sub-ready for that sort of thing gradual tred persons pressure, who lie without every jets.

ceedings, and can have only permental really for that sort of thing good-natured persons—persons who live without even giving a thought to the people in less it be it missuadenly selected by a formy of pay for their suddenly selected by a formy of pay for their dear brothers in distress. Oh, yes, these people are very respectively the cell of the collections.

"I think one cannot suddenly then to go, works because there is a famine; for doing good is a thing of vestordly and the dividence, to-morrow and the day after, famine or no famine. There is but one remedy against famine. It is necessary that men should give themselves as far as possible to good works a all times. The good wors does not conserve any time the giving bread to him that hungers, but in the more important to love than to give bread, for one may give bread without loving, into one may not love without giving bread.

"I am writing this less for you than for these persons to whom I find my self se often opens on this subject, who assert that the edited alors and to distribute them is a good work without being able to see that a good work without being able to see that a good work without being able to see that a good work without being able to see that a good work with work of love of sacrifice. Therefore, to your question. "What shall be done? I ready: Let the share of how, not love because of famine, but here above all and at all times." But it see as the this never could be done by writing, but he when the first of love is a work of sacrifice. Therefore, to your question, which would touch the hearts of how and the love because of famine, but here above all and at all times. But it see as the this never could be done by writing, but all the which would touch the hearts of how and the love hearts end famine, but here above all and at all times. But it see as the this never could be done to the love. For each all the love is a work of sacrifice. Therefore, to your question."

What shall be done? I ready: 'Let the share' of love is a work of sacr

Photography and Crime. From the London Tines

The exhibition of the Photographic Society of Great Britain, which opens to the public this morning, is of great interest, both from the artistic and the scientific point of view. In P. Josephen, a terman, has devoted his after tion to the development of photography as means of assisting the administration of the law. The screen which contains Dr. scenaria plates is one of the chief currisdites of the exhibition. He has shown by enlarging plate graphs taken upon sensitical plates that is possible to detect certain kinds of longer at the most unimpeachable way; for the most unimpeachable way; for the screen altered—and this is one of the commonist kinds of forgers—the different has comployed appear in the plate in quite different factors. Similarly where a name has first test colors. Similarly where a name has first east written in pencil and then traced even into however carefully the pencil marks have been crased, some faint treess of the planting and sure to remain in the interstices of the base, and these are revealed in the magnified photograph. Dr. Jeserich's photographs of har and of pure and impure bloods, before and after treatment with reducing agents, are also most curious, and several stories are the detections. der trials in Germany.

Lost His Leg in a Bear Figur.

Loss His Leg is a Hear Fight.

From the Sta Francisc Bully Reported of Seattle met with a servore accident at 10% Muller, on the north side of the Alaskan Fedinsula. Their names are Thomas Bowerian J. Schleffelin, and they were ashore prospecting for coal. Both were armed with riflet They came across a hear and both fired. Though badly wounded the animal male a rush at the men, and in the excitament it is fore Schieffelin could relead the hear was been them and knocked them down, one after the other, with a blow from its paw. However the other, with a blow from its paw. However the other, with a blow from the hear caned hear by the leg and crushed it from the knocked by the leg and crushed it from the knocked ten minutes later, when Schieffelin, whe had the men got back to the schience, and the type men got back to the schience, and the type there, and then Surgeon Berry 100 d the Marion supputated Boswell's leg. It is feared that blood poisoning will set in.